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09/939,454	08/24/2001	Kai-Yeung (Sunny) Siu	RAZA-01001	3653

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EXAMINER	
NGUYEN, PHUONGCHAU BA	
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2616	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/939,454	SIU ET AL.	
	Examiner	Art Unit	
	Phuongchau Ba Nguyen	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *38,39 and 41-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *38,39 and 41-59* is/are rejected.

7)☒ Claim(s) *60* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Objections

1. Claim 38 is objected to because of the following informalities: ---or---

should be inserted line 17 after the first occurrence of the word "sorted"

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 55 is rejected under 35 U.S.C. 102(b) as being anticipated by Brown (5,896,380).

Regarding claim 55,

Brown discloses a network switch, comprising:

an input layer (I/P fabric 12-fig.1) including N input layer circuits, each input layer circuit including an input layer circuit input port (fig.1) and N queues (queues 54, fig.3) corresponding to N output terminals;

a sorting circuit (inlet stage queuer 56, fig.3) to route incoming cells to one of N destinations, each destination of said N destinations having a corresponding queue within said input layer circuit, (col.4, lines 44-49); and

a transposer circuit (scheduler 58, fig.3) coupled to said N queues and said N output terminals, said transposer circuit being configured to transpose cells stored in said N queues for delivery to said N output terminals (col.4, lines 50-55);

an intermediate layer (core fabric 18, fig.1) including N intermediate layer circuits, each intermediate layer circuit including N buffers (queues 64, fig.3) positioned between N intermediate layer circuit input terminals and N intermediate layer circuit output terminals;

each intermediate layer additionally including a sorting circuit (controller 68-fig.3) to route incoming cells to said N buffers, said N buffers thereafter

delivering said incoming cells to said N intermediate layer circuit output terminals (col.4, lines 62-65); and

an output layer (O/P fabric 33-fig.1) including N output layer circuits, each output layer circuit having a transposer circuit (controller 78-fig.3) coupled to said N output layer circuit input terminals, said transposer circuit being configured to transpose data cells received at said N output layer circuit input terminals; and

an output layer circuit queue (queues 74-fig.3) coupled to said transposer circuit and said output layer circuit output port (fig.3).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 38, 42, 47, 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (5,896,380) in view of Kay (US 2004/0246891 A1).

Regarding claim 38, Brown (5,896,380) discloses a method of routing network traffic (a multi-stage ATM switch, fig.1), comprising:

receiving a serial data stream of cells or data packets at an input layer (inlet stage, fig.1), each cell of said data stream of cells including data and a header to designate a destination device (abstract, lines 3-5, see also fig.2, ATM cell with a destination field 42, sub-field 44 indicating the destination outlet stage fabric of the cell, and sub-field 46 indicating the destination outlet port of the destination outlet stage fabric);

routing a selected cell (i.e., A-D cells, fig.3) to a specified queue (i.e., 64-3 for outlet 24-3) that corresponds to said destination device (i.e., outlet 24-3, fig.3) of said selected cell (abstract, lines 3-21; also see col.6, lines 27-31);

and filling said queue with a predetermined number of cells, forming a queue of serially received cells (queue-fig.3, wherein cells being queued one after another in one in one of the eight stage queues, col.4, lines 41-55); and

when said predetermined number of cells is reached (threshold of queue having at least 4 cells, col.5, lines 38-47);

sorting or not sorting or modifying or duplicating said parallel format cells based upon predetermined cell header criteria and/or predetermined order of cell serial arrival criteria (cells being sorted in order, col.5, lines 12-37);

delivering said selected cell (i.e., A, B, C or C cells) to a selected output layer circuit (i.e., designated port destination at outlet stage fabric 24-3, fig.3) within a set of output layer circuits (i.e., outlet stage fabric 24-3, fig.3), said selected output layer circuit (i.e., port ii-fig.3) corresponding to said destination device of said selected cell (abstract, lines 3-21 & col.7, lines 1-15).

Brown discloses all the claimed limitations, except (1) transposing said serially received cells into an alternative parallel format in which all of said queue cells may be accessed on an equal basis regardless of the original order in which the cells were first serially received; and (2) transposing said sorted or not sorted or modified or duplicated parallel format cells back into a serial format.

However, in the same field of endeavor, Kay (US 2004/0246891 A1) discloses a parallel to serial converter 3316-fig.33 and serial to parallel converter 3318-fig.33 connecting to data buffer 3314-fig.33, corresponding to (1-2). Therefore, it would have been obvious to an artisan to apply Kay's teaching to Brown's system with the motivation being to provide data being multiplexed in a variety of way on the multi-transport mode cell bus (i.e., S-P or P-S).

Regarding claim 42, Brown (5,896,380) discloses a method of routing network traffic, said method comprising:

receiving a serial data stream with a set of cells or data packets, each cell including data and a header to designate a destination device (col.2, lines 43-46),

assigning a selected cell of said set of cells to a selected queue of a set of queues within an input layer circuit, said selected cell specifying a selected destination device, said selected queue corresponding to said selected destination device (col.2, lines 43-46);

and filling said queue with a predetermined number of cells, forming a queue of serially received cells (queue-fig.3, wherein cells being queued one after another in one in one of the eight stage queues, col.4, lines 41-55); and

when said predetermined number of cells is reached (threshold of queue having at least 4 cells, col.5, lines 38-47);

routing said selected cell to a selected intermediate layer circuit within a set of intermediate layer circuits, said selected intermediate layer circuit including a set of buffers (queues 64-fig.3) corresponding to a set of destination devices (col.2, lines 46-50), said selected intermediate layer circuit assigning said selected cell to a selected buffer of said set of buffers, said selected buffer corresponding to said selected destination device (col.2, lines 46-50); and

sorting or not sorting or modifying or duplicating said parallel format cells based upon predetermined cell header criteria and/or predetermined order of cell serial arrival criteria (cells being sorted in order, col.5, lines 12-37);

sending said selected cell as said selected cell arrives at said selected intermediate layer circuit (col.2, lines 50-55) to a selected output layer circuit within a set of output layer circuits, said selected output layer circuit corresponding said selected destination device, said selected output layer circuit storing said selected cell (col.2, lines 50-55).

Brown discloses all the claimed limitations, except (1) transposing said serially received cells into an alternative parallel format in which all of said queue cells may be accessed on an equal basis regardless of the original order in which the cells were first serially received; and (2) transposing said sorted or not sorted or modified or duplicated parallel format cells back into a serial format.

However, in the same field of endeavor, Kay (US 2004/0246891 A1) discloses a parallel to serial converter 3316-fig.33 and serial to parallel converter 3318-fig.33 connecting to data buffer 3314-fig.33, corresponding to (1-2). Therefore, it would have been obvious to an artisan to apply Kay's teaching to Brown's system with the motivation being to provide data being

multiplexed in a variety of way on the multi-transport mode cell bus (i.e., S-P or P-S).

Regarding claim 47, Brown discloses all the claimed limitations, except (1) generating a flow control warning signal in response to output layer congestion at said selected output layer circuit; forming a flow control header signal within a header of an incoming data cell in response to said flow control warning signal; and processing said incoming data cell through said selected intermediate layer circuit and said selected output layer circuit in accordance with said flow control header signal.

However, in the same field of endeavor, Fan (6,324,165) discloses DRC rate feedback control (flow control warning signal) for generating a rate feedback from an output port to the input port so that the input port would only send data without exceeding the minimum guaranteed rates, (column 7, line 44 to column 8, line 67, see also figure 3 and col.13, line 4-col.14, line 63), corresponding to (1). Therefore, it would have been obvious to an artisan to apply Fan's teaching to Brown's system with the motivation being to control

internal congestion and to achieve fair throughput performance among competing flows at switch bottlenecks.

Regarding claim 50, Brown further discloses wherein said sending includes sending said selected data cell from said selected intermediate layer circuit without communicating timing information with other intermediate layer circuits within said set of intermediate layer circuits (col.4, lines 63-65).

6. Claims 39, 40, 44, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (5,896,380) in view of Kay (US 2004/0246891 A1) as applied to claim 38 above, and further in view of Lipp (6,751,219).

Regarding claims 39-40, 44-45, Brown discloses all the claimed limitations, except wherein said intermediate layer is configured to identify a multicast demand signal in a cell and thereafter replicate said cell to produce a multicast signal.

However, in the same field of endeavor, Lipp (6,751,219) discloses wherein said intermediate layer is configured to identify a multicast demand signal in a cell and thereafter replicate said cell to produce a multicast signal (col.20, lines 26-58).

Therefore, it would have been obvious to an artisan to apply Lipp's teaching to Brown's system with the motivation being to avoid localized congestion and packet blocking.

7. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (5,896,380) in view of Kay (US 2004/0246891 A1) as applied to claim 42 above, and further in view of Nicols (6,473,428).

Regarding claim 43, Brown discloses all the claimed limitations, except wherein said routing is initiated when said selected queue reaches a specified cell volume level.

However, in the same field of endeavor, Nicols (6,473,428) discloses wherein said routing is initiated when said selected queue reaches a specified

cell volume level (col.5, lines 24-38). Therefore, it would have been obvious to an artisan to apply Nichols's teaching to Brown's system with the motivation being to prevent overloading at buffer.

8. Claims 48-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (5,896,380) in view of Kay (US 2004/0246891 A1) as applied to claim 42 above, and further in view of Plelissier (6,661,773).

Regarding claims 48-49, Brown discloses all the claimed limitations, except wherein said input layer is operative in a normal mode to deliver data cells to each of said intermediate layer circuits and is alternately operative in a fault mode to deliver cells to a subset of said intermediate layer circuits that remain operative.

However, in the same field of endeavor, Plelissier (6,661,773) discloses wherein said input layer is operative in a normal mode to deliver data cells to each of said intermediate layer circuits and is alternately operative in a fault mode to deliver cells to a subset of said intermediate layer circuits that remain

operative (col.4, lines 4-54). Therefore, it would have been obvious to an artisan to apply Plelissier's teaching to Brown's system with the motivation being to ensure data successfully delivered to respective destination nodes in the network.

9. Claims 41, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (5,896,380) in view of Kay (US 2004/0246891 A1) as applied to claim 38 above, and further in view of Milway (6,122,279).

Regarding claims 41 & 46, Brown discloses all the claimed limitations, except wherein said routing includes routing said selected cell to a dedicated high priority traffic intermediate layer circuit when said header specifies that said selected cell has a high priority.

However, in the same field of endeavor, Milway discloses wherein said routing includes routing said selected cell to a dedicated high priority traffic intermediate layer circuit when said header specifies that said selected cell has a high priority (col.17, lines 34-37). Therefore, it would have been obvious to

an artisan to apply Milway's teaching to Brown's system with the motivation being to provide a service to urgent traffic in a more timely manner.

Regarding claim 51, Brown further discloses that the cell header criteria comprise cell header criteria selected from the group consisting of packet identification, error correction coding, protocol type, Quality of Service (QoS), unicast service, broadcast service, and error conditions (received cell being sorted by its destination field as packet identification as claimed, col.4, lines 41-55).

Regarding claim 52, Brown further discloses wherein said predetermined number is varied according to criteria comprising criteria selected from the group consisting of a fixed number, input queue size, how old the cells are, cell header information, priority of the cells, status of the output queues, and quality of service data (figs.3, 6-9).

10. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of Kay as applied to claim 38 above, and further in view of Fan (6,324,165).

Regarding claim 53, Brown discloses all the claimed limitations, except (1) wherein if a given destination device is blocked or partially blocked, resulting in an output queue to this device becoming overly full (back pressure), then this back pressure information is used to control said predetermined number, or the criteria by which cells are transposed or sorted or modified or duplicated, in order to compensate for this blockage.

However, in the same field of endeavor, Fan (6,324,165) discloses DRC rate feedback control for generating rate feedback from an output port to the input port so that the input port would only send data without exceeding the minimum guaranteed rates, see col.7, line 44-col.8, line 67 & col.13, line 4-col.14, line 64 & fig.3, corresponding to (1). Therefore, it would have been obvious to an artisan to apply Fan's teaching to Brown's system with the motivation being to control internal congestion and to achieve fair throughput

performance among competing flows at switch bottlenecks.

Regarding claim 54, Brown discloses all the claimed limitations, except (1) wherein cells with headers indicating that the cell is high priority are transposed or sorted or modified or duplicated preferentially relative to cells with lower priority headers in response to said back pressure information.

However, in the same field of endeavor, Fan further discloses in figure 1 wherein real time multicast traffic has the highest priority at the input to the output module (detail description, paragraph 20-21 & 12 and Brief Summary, paragraph 19), corresponding to (1). Therefore, it would have been obvious to an artisan to apply Fan's teaching to Brown's system with the motivation being to control internal congestion and to achieve fair throughput performance among competing flows at switch bottlenecks.

11. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown as applied to claim 55 above, and further in view of Fan (6,324,165).

Regarding claim 56,

Brown discloses all the claimed limitations, except (1) that said output layer includes an output layer circuit configured to generate a back-pressure signal representative of the status of said output layer circuit; and said input layer includes an input layer circuit configured to be responsive to said back-pressure signal by selectively inserting flow control information into a data cell.

However, in the same field of endeavor, Fan (6,324,165) discloses DRC rate feedback control for generating rate feedback from an output port to the input port so that the input port would only send data without exceeding the minimum guaranteed rates, see col.7, line 44-col.8, line 67 & col.13, line 4-col.14, line 64 & fig.3, corresponding to (1). Therefore, it would have been obvious to an artisan to apply Fan's teaching to Brown's system with the motivation being to control internal congestion and to achieve fair throughput performance among competing flows at switch bottlenecks.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (5,896,380) in view of Lipp (6,751,219).

Regarding claim 57,

Brown discloses all the claimed limitations, except wherein said intermediate layer is configured to identify a multicast demand signal in a cell and thereafter replicate said cell to produce a multicast signal.

However, in the same field of endeavor, Lipp (6,751,219) discloses wherein said intermediate layer is configured to identify a multicast demand signal in a cell and thereafter replicate said cell to produce a multicast signal (col.20, lines 26-58).

Therefore, it would have been obvious to an artisan to apply Lipp's teaching to Brown's system with the motivation being to avoid localized congestion and packet blocking.

13. Claim 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (5,896,380) in view of Nicols (6,473,428).

Regarding claim 58,

Brown discloses all the claimed limitations, except wherein said input layer includes circuitry to identify cell priority values within cell headers, or in

which said input layer alters delivery of cells in response to said cell priority values.

However, in the same field of endeavor, Nicols (6,473,428) discloses circuitry (queue engine 1002-fig.10) to identify (queue) cell priority values (high or low priority) within cell headers (col.7, lines 5-62). Therefore, it would have been obvious to an artisan to apply Nicols's teaching to Brown's system to maintain correct temporal ordering at the output port.

14. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (5,896,380) in view of Milway (6,122,279).

Regarding claim 59,

Brown discloses all the claimed limitations, except wherein said intermediate layer circuit includes a first set of buffers to process high priority traffic and a second set of buffers to process best effort traffic, or in which said output layer includes a first set of output layer circuits to process said high priority traffic and a second set of output layer circuits to process said best effort traffic.

However, in the same field of endeavor, Milway (6,122,279) discloses wherein said intermediate layer circuit (switch) includes a first set of buffers (480-HI FIFO-fig.4) to process high priority traffic and a second set of buffers (485-LO FIFO-fig.4) to process best effort traffic (col.17, lines 8-44). Therefore, it would have been obvious to an artisan to apply Milway's teaching to Brown's system with the motivation being to avoid significant delay or delay jitter to high priority data such as video and audio

Allowable Subject Matter

15. Claim 60 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuongchau Ba Nguyen whose telephone number is 571-272-3148. The examiner can normally be reached on Monday-Friday from 10:00 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 571-272-3155. The fax

phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Phuongchau Ba Nguyen/
Phuongchau Ba Nguyen
Examiner
Art Unit 2616

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